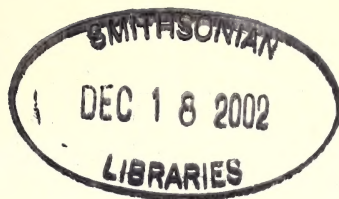


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A NEW SPECIES OF CHITON FROM THE ALEUTIAN ISLANDS

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ABSTRACT. A new species of chiton, from the subfamily Juvenichitoninae (Tonicellidae) is described from Atka Island, Aleutian Islands, Alaska. The new species is similar to *Micichiton grandispina* Sirenko, 1975, *Juvenichiton deplanatus* (Sirenko, 1975), and *Spongioradsia aleutica* (Dall, 1878), but is distinguished by valve sculpture and girdle scales.

Key words: Alaska, Juvenichitoninae, *Micichiton*, new species, Polyplacophora, Tonicellidae.

INTRODUCTION

In 1997, while on a NMFS trawl survey in the Aleutian Islands, I was able to make a single SCUBA dive at Crescent Bay on Atka Island from the chartered research vessel *F/V Dominator*. Among the many chitons collected on this dive I collected a single specimen of a small, pinkish chiton, which upon further investigation has proved to be a new species: a member of the unique subfamily Juvenichitoninae Sirenko, 1975.

Members of Juvenichitoninae are characterized by possessing 11 or 13 transverse rows of teeth on the radula, instead of the usual 17 teeth found in all other known chitons. The radula lacks the minor lateral and some or all of the uncinial teeth, and the rachidian tooth is very broad. Juvenichitoninae contains five known species in two genera. Members of the type genus, *Juvenichiton* Sirenko, 1975 possess sparsely scattered, minute spicules on the upper surface of the girdle. The members of the genus *Micichiton* Sirenko, 1975 bear profuse, relatively large spicules or scales. These characters are evident even in very small (2

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mm) individuals. Because of the profusely spiculate girdle, the new species is placed in the latter genus. Sirenko (1975) described a third genus, *Nanichiton*, which is not recognized here. Its sole species, *N. deplanatus* Sirenko, 1975 is distinguished from members of *Juvenichiton* by the much narrower jugal sinus and the very minute, deeply imbedded spicules of the girdle. These characters seem to this author to be of specific rather than of generic value. Kaas and Van Belle (1987) synonymized *Micichiton* with *Juvenichiton*, but I disagree with this based on the above mentioned distinctions of girdle ornamentation.

Juvenichitoninae are very small (adult length 4-6 mm in *Micichiton*, and 8-10 mm in *Juvenichiton*), insular species, restricted to the northern Pacific Ocean, along the Kuril and Aleutian Islands (including the Commander Is. and Shumagin Is.), and the Pribilof Islands in the eastern Bering Sea, at depths of 1-20 m. All of the known species live exclusively on algae. *Juvenichiton saccharinus* (Dall, 1878) is found only on the red alga *Constantinea subulifera* and *J. albocinnamomeus* Sirenko, 1975 lives exclusively on the brown alga *Thalassiophyllum clatrum*. All other known species of Juvenichitoninae live on coralline red algae (Sirenko, 1975; Clark, 1991). The new species is most similar to *Micichiton grandispina* Sirenko, 1975.

ACRONYMS USED IN TEXT

LACM, Los Angeles County Museum of Natural History; NMFS, National Marine Fisheries Service; RNC, Private collection of Roger N. Clark.

SYSTEMATICS

(After Sirenko, 1993)

Order: CHITONIDA Thiele, 1910

Suborder: ACANTHOCHITONINA Bergenhayn, 1930

Family: TONICELLIDAE Simroth, 1894

Subfamily: JUVENICHITONINAE Sirenko, 1975

Genus: *Micichiton* Sirenko, 1975

Type Species: *Micichiton grandispina* Sirenko, 1975, by OD.

Micichiton callisto new species

Figures 1-6

Diagnosis: Holotype small (6 mm), oval, valves smooth, rounded; lateral areas not defined; mucro anterior 1/3; girdle with erect, bluntly pointed spicules, to about 70 μ m in length; radula with eleven teeth per row; major lateral teeth large, heavy, with three pointed cusps. Color of valves and girdle pinkish.

Description: Holotype small (6.0 x 3.2 x 1.8 mm), oval in outline; valves moderately elevated, rounded (not carinated), thin, fragile, smooth. Head valve (Fig. 1) semi-circular, posterior margin widely v-shaped. Intermediate valves (Fig. 2, valve five) oblong, bluntly beaked, margins slightly rounded, lateral areas not defined. Tail valve (Fig. 3) small, oval, mucro anterior 1/3, post-mucronal area slightly raised. Sutural laminae short, rounded; jugal sinus very wide, more than 1/3 of valve width. Insertion teeth short, thick, blunt. Slit formula 8/1/9, however, on the head valve, some of the teeth are very wide, and it appears that either some teeth have fused, or that some slits never developed.

Color: valves light pink exteriorly, interior deep rose; girdle pink.

Girdle rather narrow, about 1/4 the width of valve five, clothed dorsally with densely packed, erect, smooth, blunt tipped spicules to about 75 μm x 19 μm (Fig. 4). Margin of girdle with long, smooth, bluntly pointed spicules, to 120 μm x 20 μm (Fig. 4). Ventral surface with small, densely packed, erect, sharply pointed spicules to 50 μm x 18 μm (Fig. 5), which are pleated and flattened on four sides on the distal 1/2.

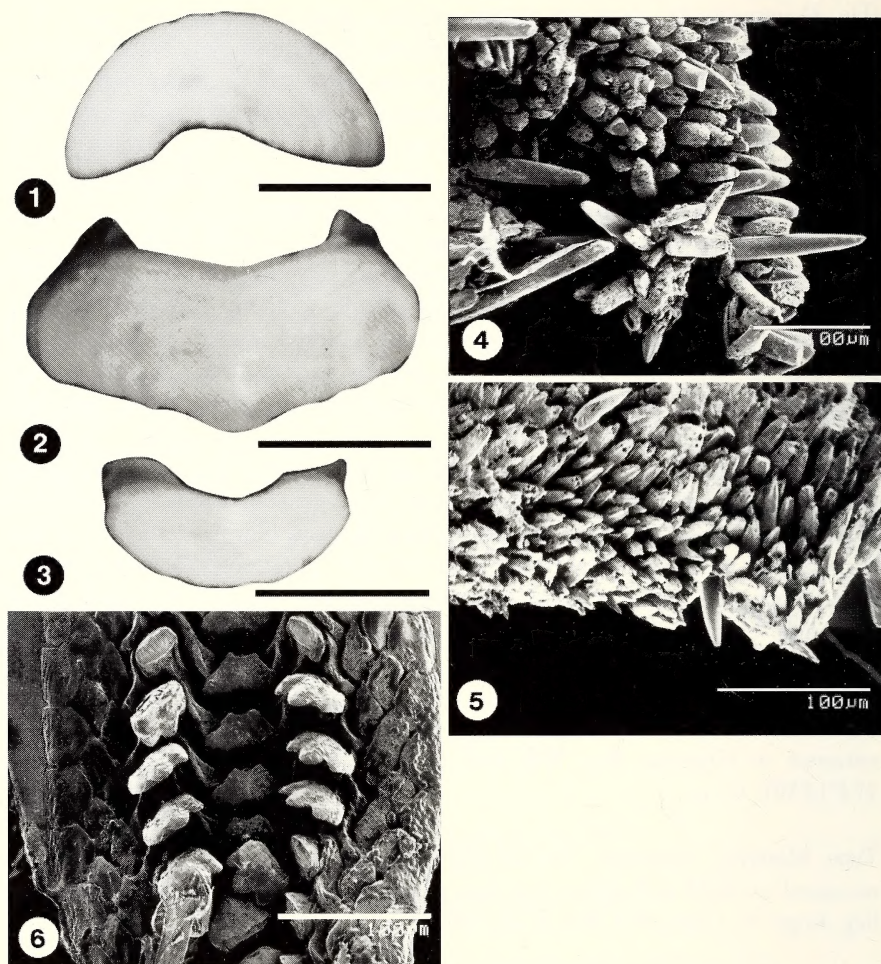
Radula (Fig. 6) typical for genus, with eleven transverse rows of teeth; central tooth broad, chevron shaped, with thick base, apics generally eroded; major lateral teeth large, denticle cap heavy, broad, tridentate; cusps bluntly triangular, central cusp largest; inner cusp slightly shorter, narrower; outer cusp somewhat shorter than inner cusp; single uncinal tooth long, narrow, s-shaped; first and second marginals bluntly diamond shaped, outer marginal flattened on outer edge, rounded on inner edge.

Type Locality: Alaska, Aleutian Islands, Andreanof Islands, point at east side of entrance to Crescent Bay, NW end of Atka Island (Bering Sea), (52°02'N, 174°14'W), 10 m.

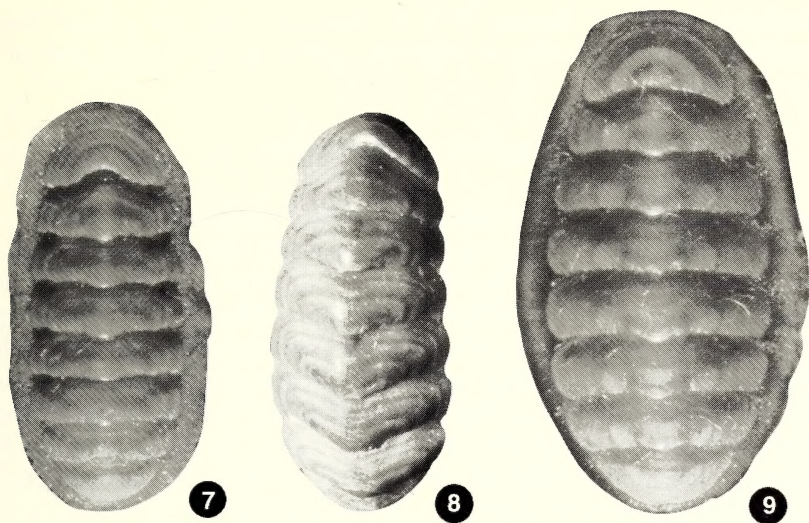
Type Material: Holotype, LACM 2884; radula, girdle and plate fragments mounted on SEM stub; valves one, five, and eight complete, separate, unmounted (leg. Roger N. Clark, SCUBA, 8 July 1997).

Habitat: Coralline algae (*Lithothamnion*?) encrusted rock ledge at 10 m.

Etymology: The name is from the Greek *kallistos*, meaning beautiful.



Figures 1-6. *Micichiton callisto* LACM 2884. 1 Head valve (bar = 1 mm). 2 Intermediate valve five (bar = 1 mm). 3 Tail valve (bar = 1 mm). 4 Dorsal and marginal girdle spicules (bar = 100 μ m). 5 Ventral girdle spicules (bar = 100 μ m). 6 Radula (bar = 100 μ m).



Figures 7-9. Chiton species. 7 *Micichiton grandispina*, RNC 1018, Hot Springs Bay, Tanaga Id., Aleutian Is., Alaska (leg. R. N. Clark, 3 July 1994, 3-4 m on cobbles), length 6.5 mm. 8 *Spongioradsia aleutica* (Dall, 1878), RNC 260, Makushin Bay, Unalaska Id., Aleutian Is., Alaska (leg. R. N. Clark, 21 April 1985, 1 m on coralline encrusted cobbles), length 6.0 mm. 9 *Juvenichiton deplanatus* (Sirenko, 1975), RNC 1017, Hot Springs Bay, Tanaga Id., Aleutian Is., Alaska (leg. R. N. Clark, 3 July 1994, 3-4 m on cobbles), length 8.0 mm.

DISCUSSION

At first glance *Micichiton callisto* resembles *Juvenichiton deplanatus* (Sirenko, 1975)(Fig. 9), with its pinkish color and broad outline, however, the spiculate girdle immediately distinguishes it. *Micichiton callisto* also bears some resemblance to *Spongioradsia aleutica* (Dall, 1878)(Fig. 8) which is common in the same coralline algae habitat, and *Micichiton grandispina* (Fig. 7) which is also found in the same habitat, but is much less common. From both of these aforementioned species *M. callisto* is easily distinguished by the broader outline and less elevated valves, which are smooth and shiny, without raised lateral areas, and more robust major lateral teeth of the radula.

Micichiton callisto raises the number of known species of *Micichiton* to three and *Juvenichitoninae* to six respectively. Of these six species four other species, *Juvenichiton saccharinus*, *J. albocinnamomeus*, *J. deplanatus*, and *Micichiton*

grandispina are recorded from the Aleutians (Clark, 1991). The sixth species, *Micichiton kurilensis* Sirenko, 1975 is recorded from the nearby Russian Commander Islands (Sirenko & Agapova, 1997), at the western end of the Aleutian chain.

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